[1]史小康,李耀东,刘健文,等.华北一次暴雨过程的螺旋度分析[J].自然灾害学报,2012,04:48-56.

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华北一次暴雨过程的螺旋度分析(PDF)

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Title: Analysis of helicity in a rainstorm in north China

作者: 史小康[1; 2]; 李耀东[1]; 刘健文[1]; 黄兵[1]; 刘向培[1; 3]; 陈军庆[1; 3]

1. 空军装备研究院航空气象防化研究所,北京 100085;
2. 中科院寒旱区陆面过程与气候变化重点实验室,甘肃 兰州 730000;
3. 解放军理工大学气象学院,江苏 南京 211101

Author(s): SHI Xiaokang[1; 2]; LI Yaodong[1]; LIU Jianwen[1]; HUANG Bing[1]; LIU Xiangpei[1; 3]; CHEN Junqing[1; 3]

1. EAAF Institute of Aeronautical Meteorology and Chemical Deference, Beijing 100085, China;
2. Key laboratory of Land Surface Process and Climate Change in Cold and Arid Regions, CAS, Lanzhou 730000, China;
3. Meteorological Institute of PLAUST, Nanjing 211101, China

关键词: 螺旋度; 华北暴雨; 数值模拟; ARPS; ADAS

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摘要: 采用ARPS数值模式对华北的一次暴雨过程进行了数值模拟,详细分析了该过程螺旋性结构的建立与发展过程。结果表明:螺旋度的高低空配置对诊断对流系统的发生发展和暴雨的落区有重要的指导意义;*xy*-螺旋度锋区内靠近正值区的一侧有利于暴雨的发生,但反映的降水落区范围较实际的要大;高层*z*-螺旋度负值区范围及数值的明显增大预示着对流系统的发展和降水率的增大;低层*z*-螺旋度在3.25 km高度处的正值中心区与降水落区对应较好;与*xy*-螺旋度相比,*z*-螺旋度给出了更为精准的降水位置,是一个能够综合反映系统维持、发展以及天气现象剧烈程度的参数。

Abstract: In this paper, a rainstorm in north China was simulated by the ARPS model and the establishment and development process of its helicity was analyzed in detail. Results show that the understanding of the configuration of helicity in low level and high

level is helpful to analyzing the occurrence and development of the convective systems and obtaining the location of the precipitations. Area having positive values within xy-helicity front is in favor of the occurrence of the rainstorms, but its displayed range is usually larger than that of the actual precipitation. At high level, the obvious increase of the negative z-helicity indicates the stronger development of the convective systems and more rainfall; while at low level, about 3.25km in height, the central